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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : David COATES et al.

Serial No.: 10/088,359

Group Art Unit: 2871

Filed: March 18, 2002

Examiner: CALEY, Michael H.

For: OPTICAL COMPENSATOR AND LIQUID CRYSTAL DISPLAY I

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §§ 1.56, 1.97 and 1.98**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This information disclosure statement is made in accordance with 37 C.F.R. §§ 1.56, 1.97 and 1.98 as follows:

**Timing and Fees**

- ☒ Under 37 C.F.R. § 1.97(b), no fee or statement is required for filing this information disclosure statement is filed:
- ☐ within three months of the filing date of a national application other than a CPA under § 1.53(d);
  - ☐ within three months of the actual filing date of the national phase of a PCT application; OR
  - ☒ before the mailing of a first substantive office action (including after filing of an RCE).
- ☐ Under 37 C.F.R. § 1.97(c), this information disclosure statement is filed after the periods specified in 37 C.F.R. § 1.97(b), but before the mailing date of:
- ☐ a final rejection under 37 C.F.R. 1.113;
  - ☐ termination of prosecution, e.g. Ex Parte Quayle, M.P.E.P § 609(B)(2); OR
  - ☐ a notice of allowance under 37 C.F.R. § 1.311; and

is accompanied by:

- ☐ the statement as specified in 37 C.F.R. § 1.97(e) set out below; OR
- ☐ a check covering the fee of \$180.00 under 37 C.F.R. § 1.17(p).
- ☐ Under 37 C.F.R. § 1.97(d), this information disclosure statement is filed after the mailing date of the following actions which have not been withdrawn:
  - ☐ a final action under 37 C.F.R. § 1.113;
  - ☐ termination of prosecution, e.g. Ex Parte Quayle, M.P.E.P § 609(B)(2); OR
  - ☐ a notice of allowance under 37 C.F.R. § 1.311;

AND is filed on or before payment of the issue fee; AND is accompanied by:

- ☐ the statement as specified in 37 C.F.R. § 1.97(e) as set forth below, and the fee of \$180.00 under 37 C.F.R. § 1.17(p).

Statements Under 37 C.F.R. 1.97(e)

- ☐ Each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application having a mailing date not more than three months prior to the filing date of this information disclosure statement; or
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the undersigned attorney after making reasonable inquiry, no item of information contained in this information disclosure statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing date of the information disclosure statement.

Cited Materials

- ☐ Copies of materials listed but not attached were cited in benefit (35 U.S.C. § 120) ancestor application Serial No. \_\_\_\_\_, on Form 892 by the Examiner and/or Form 1449 by the applicant; see 37 C.F.R. § 1.98(d).
- ☐ Copies of materials listed but not attached were cited in an international search report dated \_\_\_\_\_.
- ☒ Copies of the materials listed are attached (except for the foregoing).

### Non-English Language References

☐ An English-language search report or equivalent paper from a foreign patent office is provided indicating the relevance of the cited reference(s).

☐ A foreign-language search report from a foreign patent office is provided, and pertinent parts are translated substantively below:

X = document of particular relevance when it is taken alone

Y = document of particular relevance when it is combined with another such document

A = document defining the general state of the art

O = non-written disclosure

P = intercalated document

T = document cited to understand the theory or principle underlying the invention

E = patent document which has the benefit of a date earlier than the filing date and which was published only on or after this filing date

D = cited in the application

L = cited for another reason

& = publication of member of same patent family

☐ Translation of other relevant information on foreign search report

[insert necessary translation here]

### Other Information

Attached are references cited in patent application no.10/088,358, attorney docket no. MERCK-2388, as well as a copy of currently pending claims in that application.

### Payment of Fees Due (If Any):

☐ A check for \$\_\_\_\_\_ covering the fee identified above is attached.

☐ Please charge to Deposit Account No. 13-3402 \$\_\_\_\_\_ for the fee identified above.

☒ The Commissioner is hereby authorized to charge or credit any overpayment to Deposit Account #13-3402, two copies of this paper are attached for this purpose.

Respectfully submitted,

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Attorney Docket No.: MERCK-2392

Date: 16 July 2004

JER:jqs

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**Application No.: 10/088,358, Filed: 18 March 2002, Applicant: Cutler et al.**

**Listing of Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) An optical compensator for liquid crystal displays comprising
  - at least one O plate retarder,
  - at least one planar A plate retarder, and
  - at least one negative C plate retarder,wherein the A plate and the O plate have substantially the same retardation.
2. (Previously Presented) The optical compensator according to claim 1, comprising one O plate, one planar A plate and two negative C plates.
3. (Previously Presented) The optical compensator according to claim 1, comprising one O plate, one planar A plate and one negative C plate, with the C plate situated between the O plate and the planar A plate.
4. (Previously Presented) The optical compensator according to claim 1, wherein the average tilt angle  $\theta_{ave}$  in said O plate retarder is 2 to 88°.
5. (Previously Presented) The optical compensator according to claim 1, wherein the tilt angle in said O plate retarder varies monotonously in a direction perpendicular to the plane of the film from a minimum value  $\theta_{min}$  at one surface of the film to a maximum value  $\theta_{max}$  at the opposite surface of the film.
6. (Previously Presented) The optical compensator according to claim 5, wherein  $\theta_{min}$  is 0 to 80°.
7. (Previously Presented) The optical compensator according to claim 5, wherein  $\theta_{max}$  is 10 to 90°.

8. (Previously Presented) The optical compensator according to claim 1, wherein the thickness of said O plate and/or planar A plate is 0.1 to 10  $\mu\text{m}$ .

9. (Currently Amended) The optical compensator according to claim 1, wherein the optical retardation of said O plate is 20 to 300 ~~30~~ nm.

10. (Previously Presented) The optical compensator according to claim 1, wherein the optical retardation of said planar A plate is 20 to 300 nm.

11. (Previously Presented) The optical compensator according to claim 1, wherein the O plate comprises a linear or crosslinked polymerized liquid crystalline material with a tilted or splayed structure.

12. (Previously Presented) The optical compensator according to claim 1, wherein the planar A plate comprises a linear or crosslinked polymerized liquid crystalline material with a planar structure.

13. (Previously Presented) The optical compensator according to claim 1, wherein at least one of the C plates is a negatively birefringent polymer film.

14. (Currently Amended) The optical ~~Optical~~ compensator according to claim 13, wherein said polymer film is a negatively birefringent TAC or DAC film.

15. (Previously Presented) The optical compensator according to claim 1, wherein the C plate comprises a linear or crosslinked polymerized chiral liquid crystalline material with a helically twisted structure.

16. (Currently Amended) The optical compensator according to claim 15, wherein the helical pitch of the chiral liquid ~~iquid~~ crystalline material is said C plate is less than 250 nm.

17. (Previously Presented) A liquid crystal display device comprising the following elements

- a liquid crystal cell formed by two transparent substrates having surfaces which oppose each other, an electrode layer provided on the inside of at least one of said two transparent substrates and optionally superposed with an alignment layer, and a liquid crystal medium which is present between the two transparent substrates,

- a polarizer arranged outside said transparent substrates, or a pair of polarizers sandwiching said substrates, and

- at least one optical compensator according to claim 1 being situated between the liquid crystal cell and at least one of said polarizers,

it being possible for the above elements to be separated, stacked, mounted on top of each other, coated on top of each other or connected by means of adhesive layers.

18. (Previously Presented) A liquid crystal display device according to claim 17, which is a TN, HTN or STN display.

19. (Previously Presented) An optical compensator for liquid crystal displays comprising

- at least one O plate retarder,
- at least one planar A plate retarder, and
- at least one negative C plate retarder,

wherein the A plate and the O plate have the same retardation.

20. (Previously Presented) An optical compensator for liquid crystal displays comprising

- at least one O plate retarder,
- at least one planar A plate retarder, and
- at least one negative C plate retarder,

wherein the negative C plate comprises a linear or crosslinked polymerized chiral liquid crystalline material with a helically twisted structure having a helical pitch of less than 250 nm.

21. (Currently Amended) An optical compensator for liquid crystal displays comprising

- at least one O plate retarder,
- at least one planar A plate retarder, and
- exactly at least two negative C plate retarders.

22. (Previously Presented) An optical compensator for liquid crystal displays comprising

- at least one O plate retarder,
- at least one planar A plate retarder, and
- at least one negative C plate retarder,

wherein the C plate is situated between the O plate and the planar A plate.

Please add the following new claim:

--23. (New) An optical compensator for liquid crystal displays comprising



- at least one O plate retarder,
- at least one planar A plate retarder, and
- at least two negative C plate retarders, wherein at least one negative C plate comprises a linear or crosslinked polymerized chiral liquid crystalline material with a helically twisted structure having a helical pitch of less than 250 nm.--

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 2

### Complete if Known

Application Number	10/088,359
Filing Date	March 18, 2002
First Named Inventor	David COATES et al.
Group Art Unit	2871
Examiner Name	Caley, Michael H.
Attorney Docket Number	MERCK-2392

### U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		
	A	5,798,808		Van Haaren et al.	08-1998
	B	6,630,974		Galabova et al.	10-2003
	C	5,504,603		Winker et al.	04-1996
	D	6,417,903		Yasushi Kaneko	07-2002
	E	4,678,842		Sandler, Stanley, R.	7-07-1987
	P	4,718,618		Power et al.	01-12-1998

### FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	F	EP	0 838 713		Sumitomo Chem. Co.	04-29-1988		
	G	EP	0 887 691		Optical Imaging Sys.	12-30-1998		
	H	EP	0 676 660		Rockwell Intl. Corp.	10-11-1995		
	I	EP	864906		Aminaka et al.	09-1998		
	J	EP	0218929		Asahi Glass	04-1987		
	K	WO	98/08880		Minnesota Mining and Manufacturing Co.	03-05-1998		

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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